PCSS Providers Clinical Support System

Introduction to the Treatment of Stimulant Use Disorders

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Project ECHO®

PCSS Providers Clinical Support System

Territory Acknowledgement

I respectfully acknowledge the land on which I live and work is the traditional territory of the Coast Salish Peoples, including the unceded homelands of the xʷməθkwəy̓əm (Musqueam), Sḵwxw̱ú7mesh (Squamish), and səl̓ílwətaɬ (Tsleil-Waututh) Nations.

Disclosures

- Research grants from Michael Smith Health Research BC and the Canadian Institutes of Health Research (CIHR)

The content of this activity may include discussion of off label or investigative drug uses. The faculty is aware that is their responsibility to disclose this information.

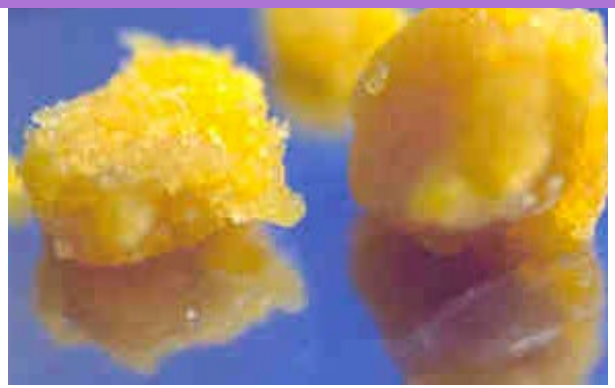
Educational Objectives

- At the conclusion of this activity participants should be able to:
  - Describe the most commonly used unregulated stimulants
  - Appreciate shifts in patterns of use and health consequences over time in North America
  - Adopt a formal approach to the assessment of stimulant use including:
    - Intoxication & withdrawal management
    - Psychosocial treatments
    - Pharmacological treatments
  - Apply a harm reduction lens to stimulant use

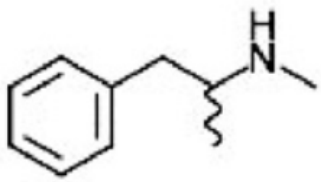
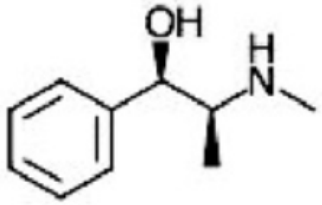
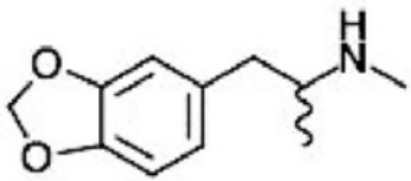
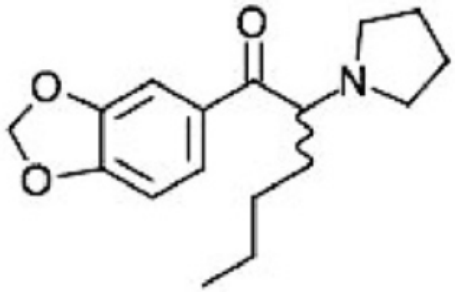
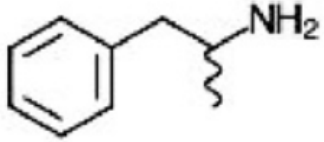
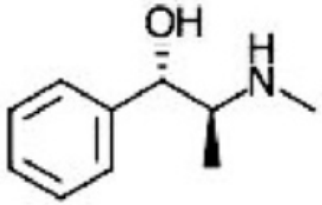
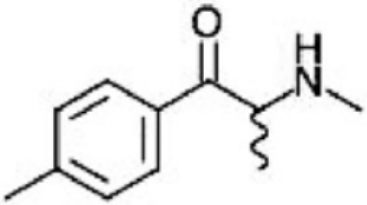
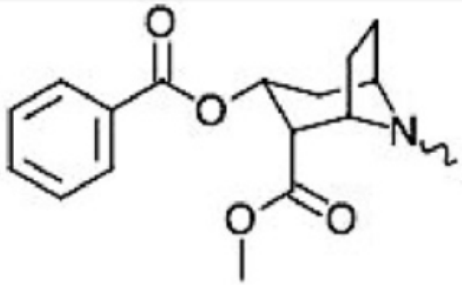
Background


Cocaine/crack

Amphetamine/methamphetamine

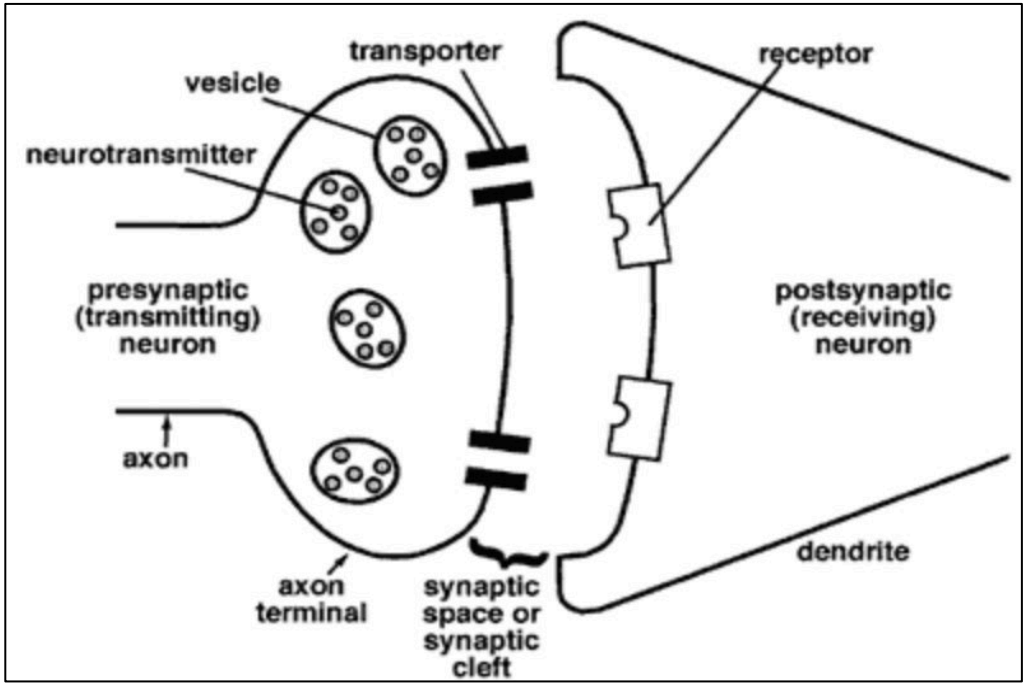



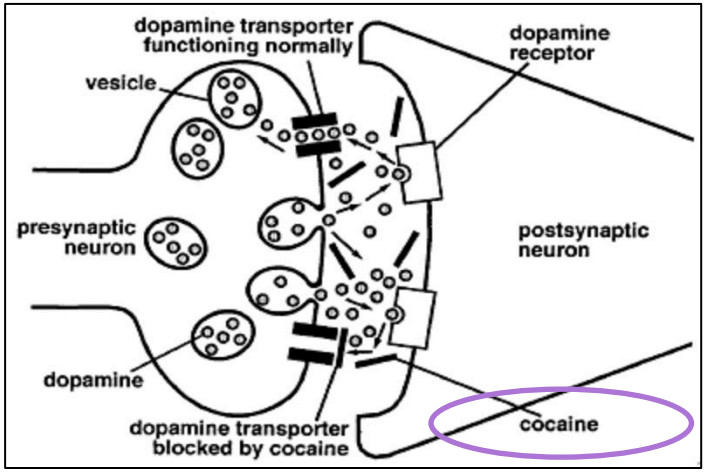

Background

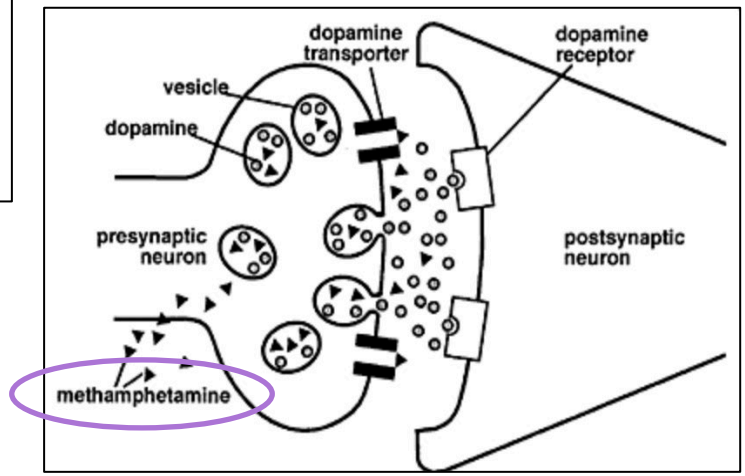
			
Methamphetamine	Ephedrine	MDMA	MDPV
			
Amphetamine	Pseudoephedrine	Mephedrone	Cocaine

All of the above compounds belong to the phenethylamine class of psychostimulants except cocaine; MDMA = methylenedioxymethamphetamine; MDPV = methylenedioxypyrovalerone

Background



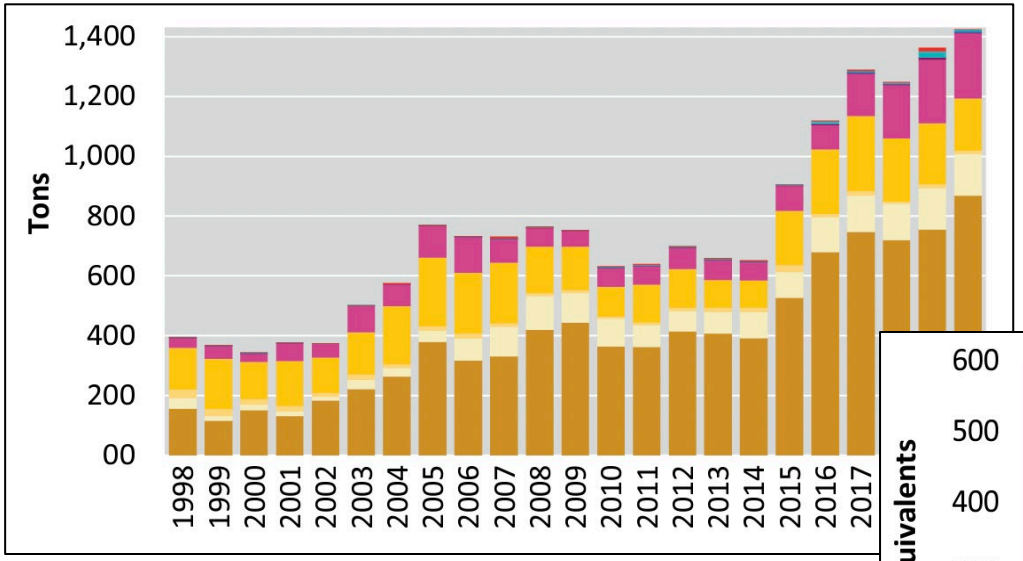




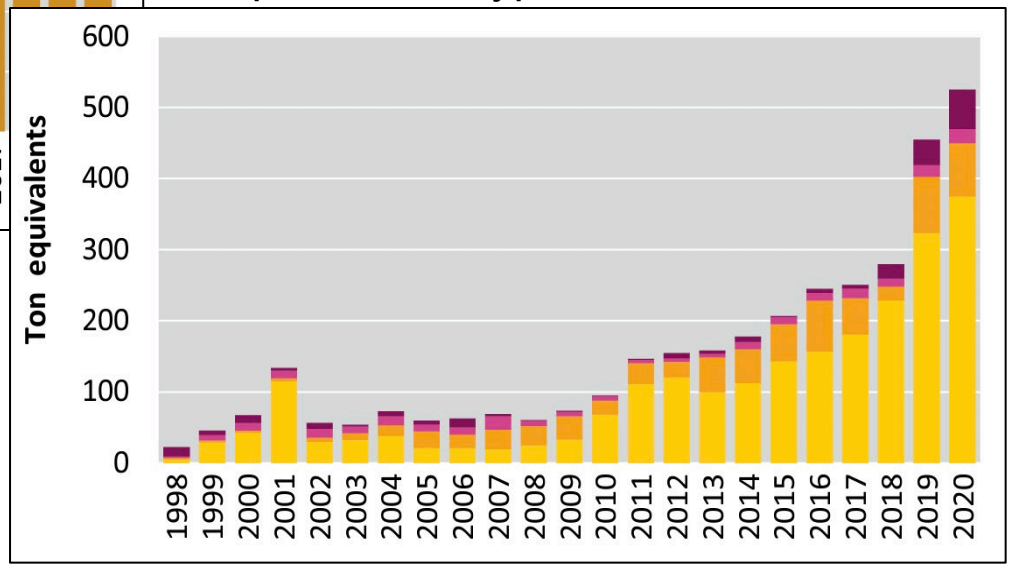
Increased monoamines = wakefulness, energy, sense of well-being, euphoria, <u>excess sympathetic tone</u>

Epidemiology

Cocaine seizures

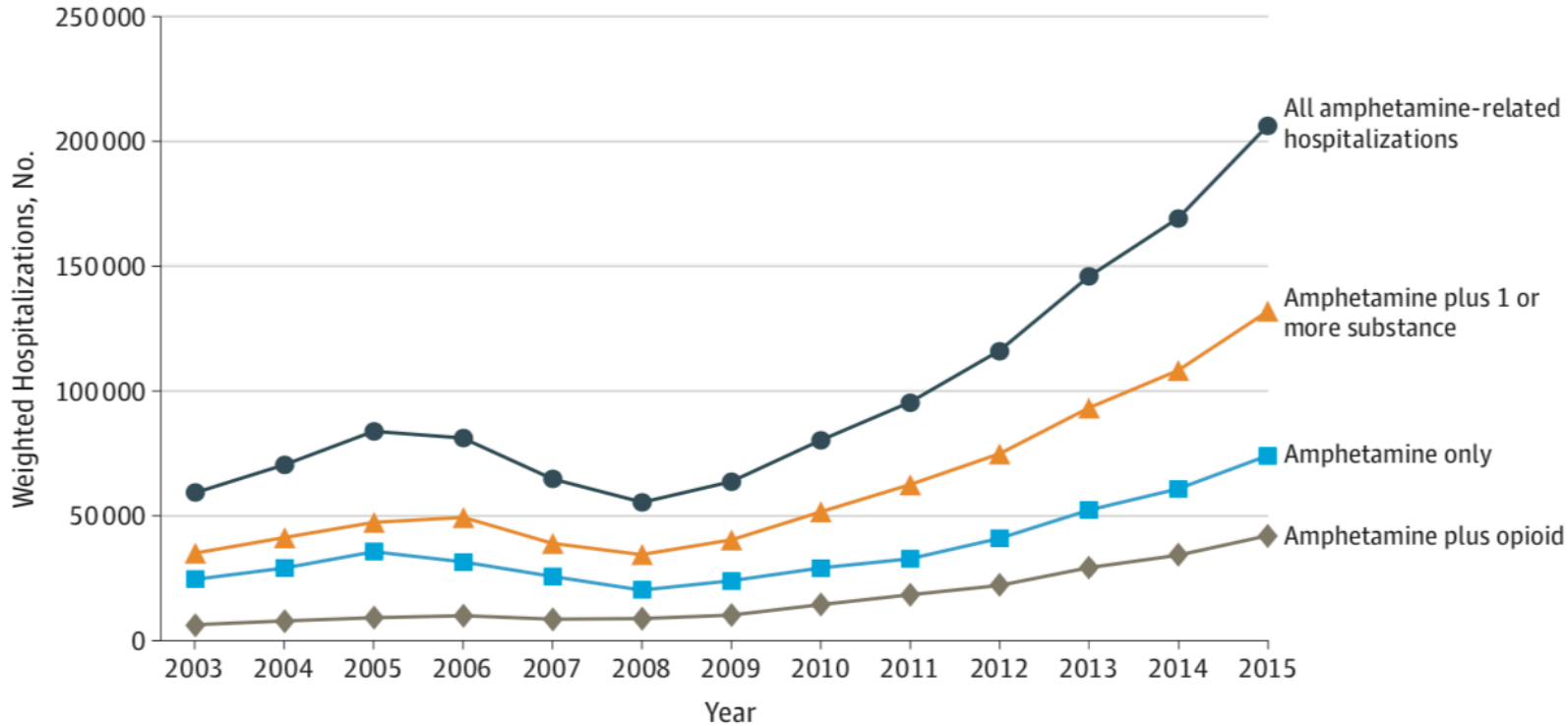


Amphetamine-type stimulant seizures

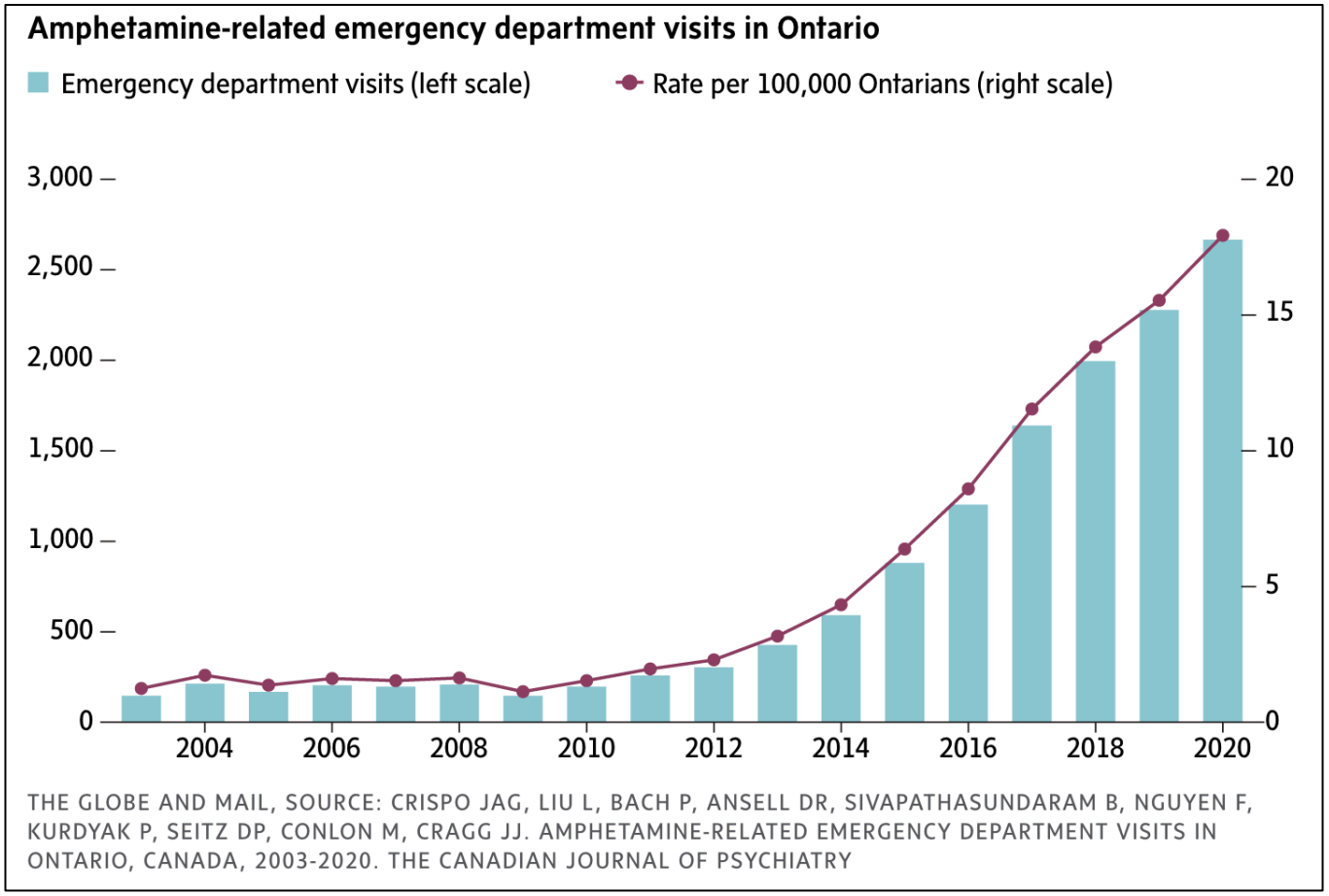


Epidemiology

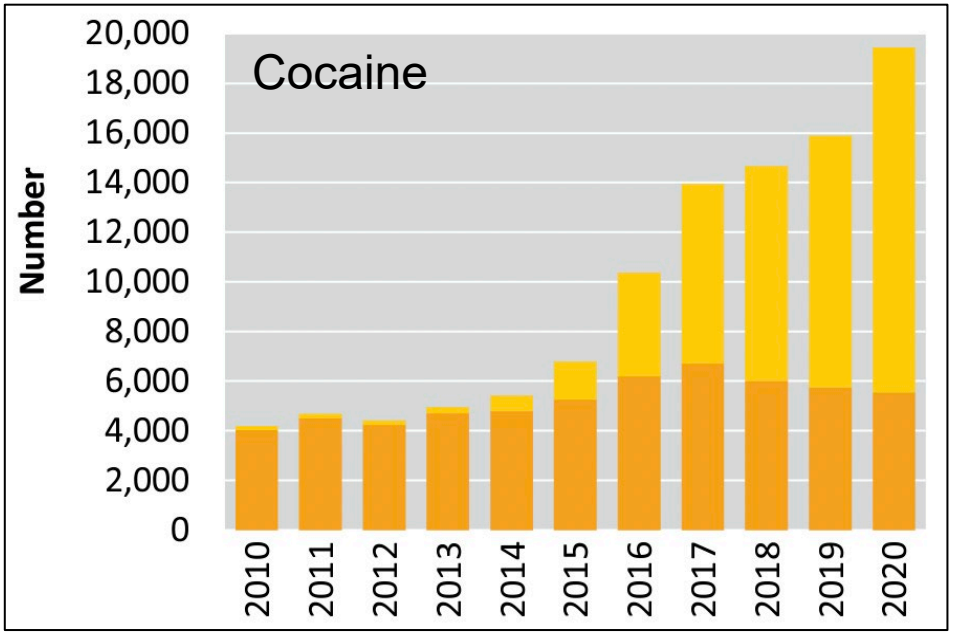
Figure 1. Amphetamine-Related Hospitalizations in the United States, 2003 to 2015

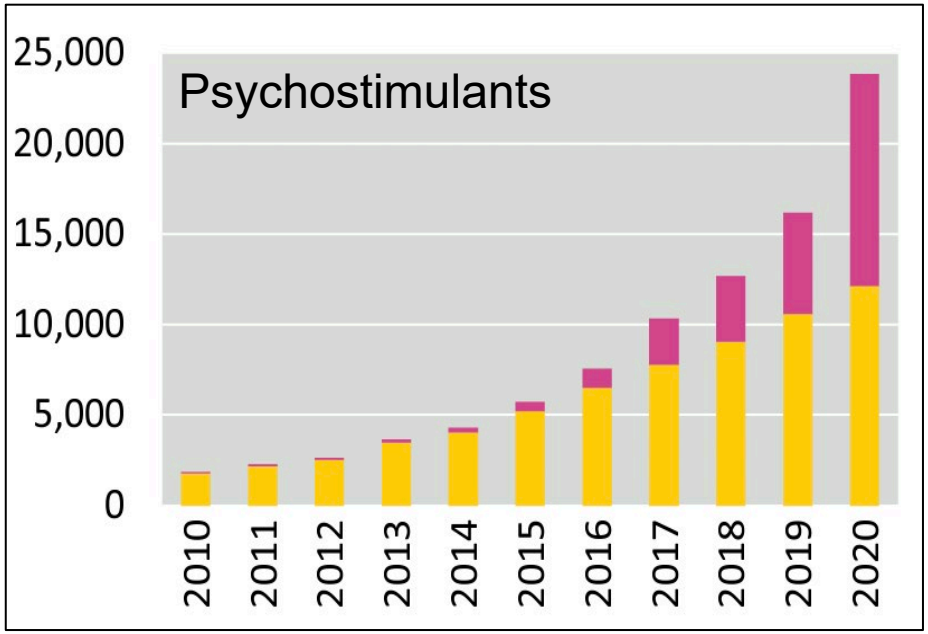


Epidemiology



Overdose Deaths in the US

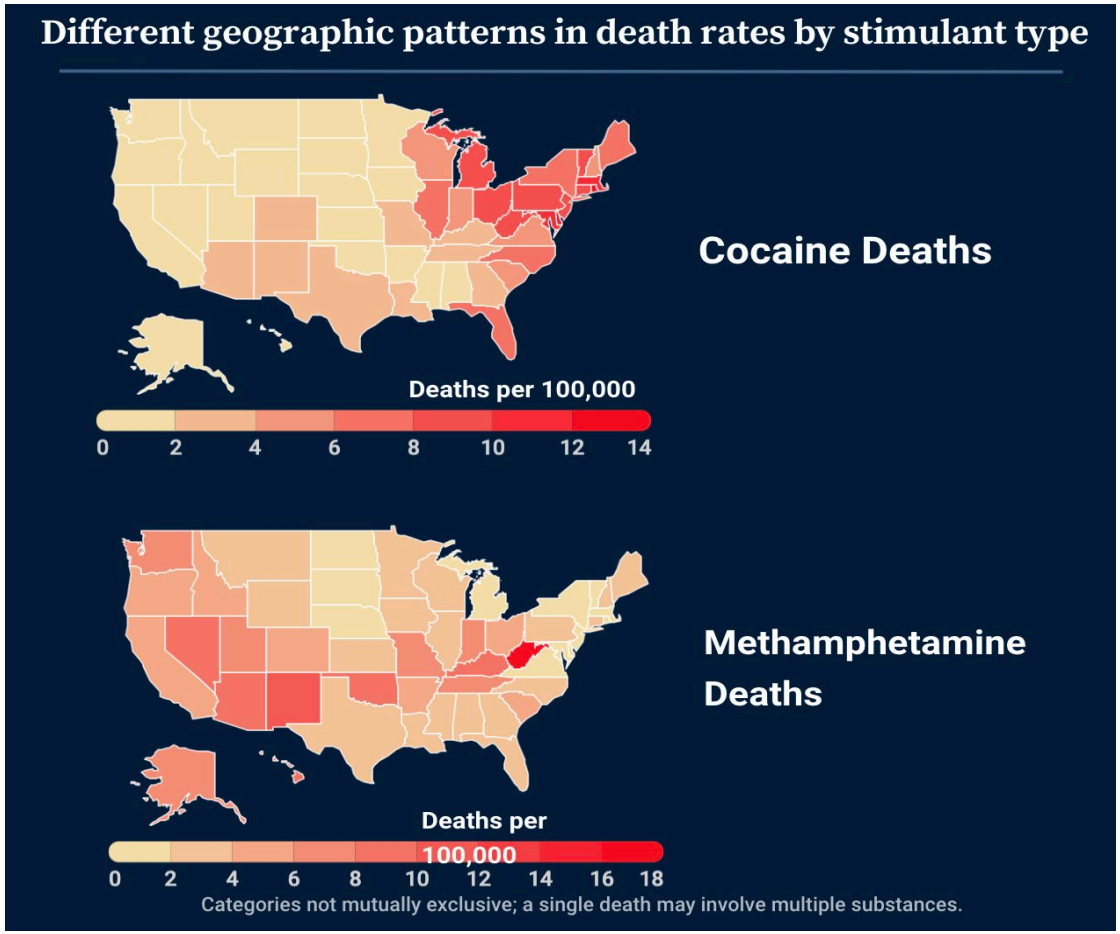




- Overdose deaths involving cocaine and synthetic opioids
- Overdose deaths involving cocaine without synthetic opioids

- Deaths involving psychostimulants and synthetic opioids
- Deaths involving psychostimulants without synthetic opioids

Overdose Deaths in the US



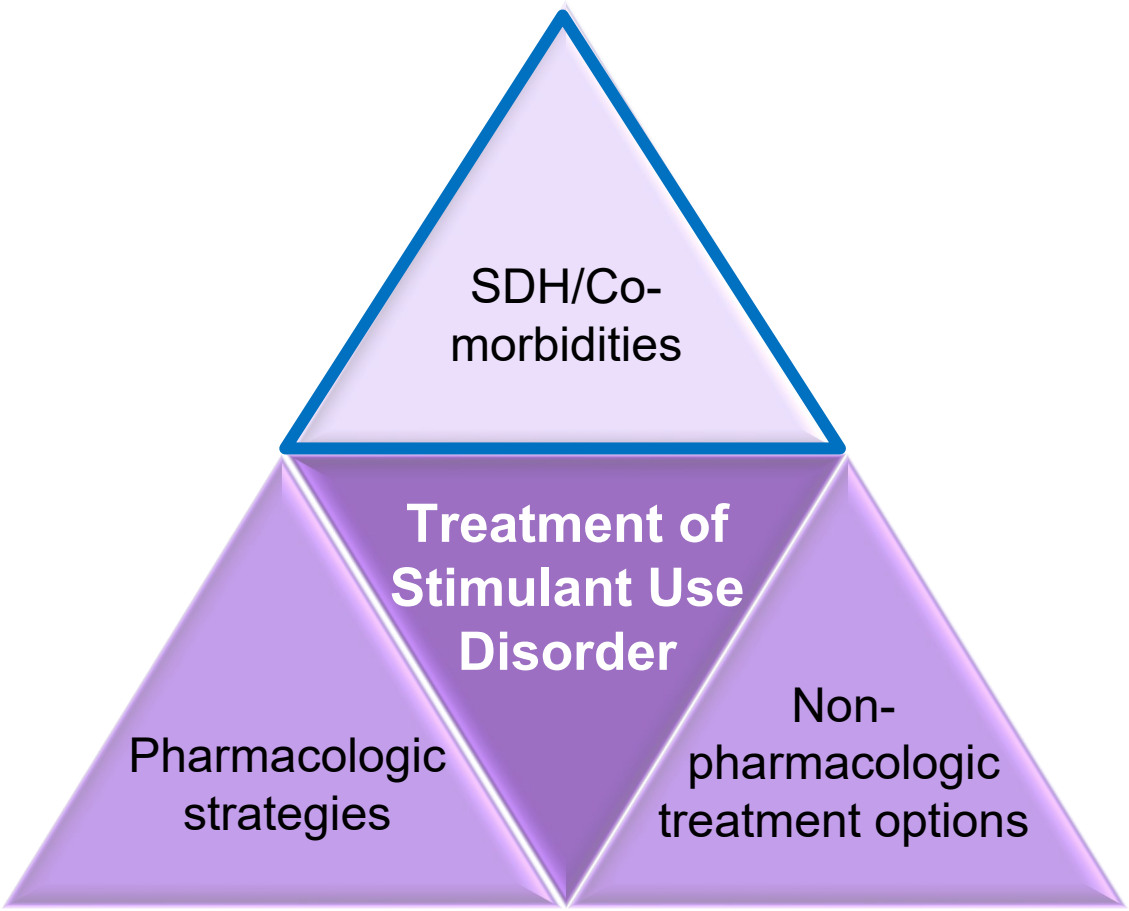
- Patterns of use are highly regional, and may differ significantly among different populations
- Treatment approaches must be adapted to local resources, needs, drivers, patterns of use, etc.

Acute Intoxication

Symptoms	Management
Mania/paranoia/psychosis	Minimize stimulation: • Quiet location • Dimly lit • Cool compress • Soft voices
Hypertension, agitation, sweating	Food, water, blankets
Skin-picking/formication (delusions of insects under the skin)	Chemical sedation ONLY IF ABSOLUTELY REQUIRED • Benzos are first line
Abnormal movement (choreoathetosis, ataxia)	
Miosis	

**How can we distinguish agitation/intoxication from frank psychosis? How does this change management?*

Treatment


SDH/Co-morbidities
Treatment of Stimulant Use Disorder
Pharmacologic strategies
Non-pharmacologic treatment options

Psychosocial Treatment

1. Contingency management (CM)
2. Cognitive behavioural therapy (CBT)
3. Community reinforcement approach (CRA)
4. 12-step programs
5. Motivational interviewing
6. Meditation-based therapy
7. Non-contingent rewards
8. Psychodynamic therapy
9. Combinations programs
10. Bed-based treatment programs

Psychosocial Treatment

1. **Contingency management (CM)**
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Contingency Management

- Uses principles of operant conditioning to reduce reinforcement provided by drug use while simultaneously increasing reinforcement for healthier activities
- Applies contingencies in the form of positive rewards in order to promote goals such as reduction in substance use or retention in care
  - Voucher or cash based
  - Escalating rewards or "fish-bowl"
- In a meta-analysis of 50 RCTs effects of contingency management on abstinence at the end of treatment NNT = 5.44

Limitations: questionable long-term benefits, limited uptake due to moral objections

Cognitive Behavioural Therapy

- Short-term approach to help identify the thoughts, feelings, and actions that occur both before and after stimulant use
- Goal is to unlearn established habits and behaviours associated with use and learn more functional coping skills
- Helps patients to recognize situations in which they are likely to use drugs and to use coping skills to change their behaviour

- In a meta-analysis of 50 RCTs effects of CBT on abstinence at the end of treatment non-significant
- Individual studies have shown some benefit

Limitations: inconsistent results in the literature, requires specialist training

Community Reinforcement Approach

- Multicomponent approach that considers how environment influences habitual substance use
- Interventions include functional analysis, coping-skills training, and social, familial, recreational, and vocational reinforcements
- Focused on skills training, improving relations, employment and vocational counselling, and cultivating new activities and social networks

- In a meta-analysis of 50 RCTs effects of CM + CRA were strongest with NNT = 4.07 at end of treatment, NNT = 3.68 at longest follow-up

Limitations: complex and multi-layered, resource intensive, requires specific training

Choosing an Intervention

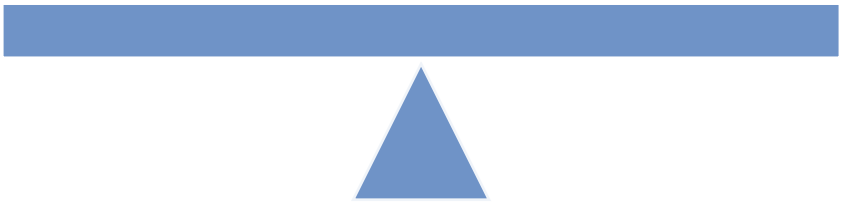
No guidance as to which intervention should be considered first

Include a **physical and psychosocial** assessment to help inform options

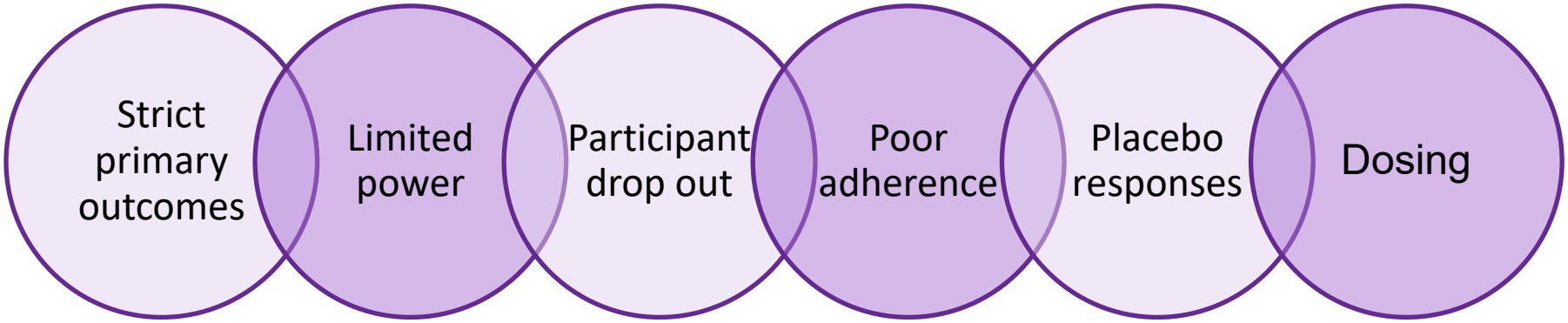
Discuss treatment options and rationale, including weighing of **risks and benefits**

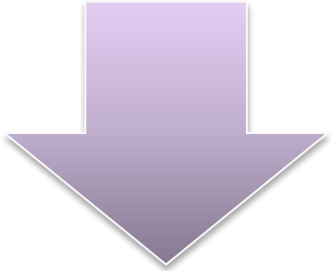
Follow a **person-centred** and evidence-informed approach

Should be informed by the **individual's treatment goals** and **preferences**



Evidence for Pharmacotherapy





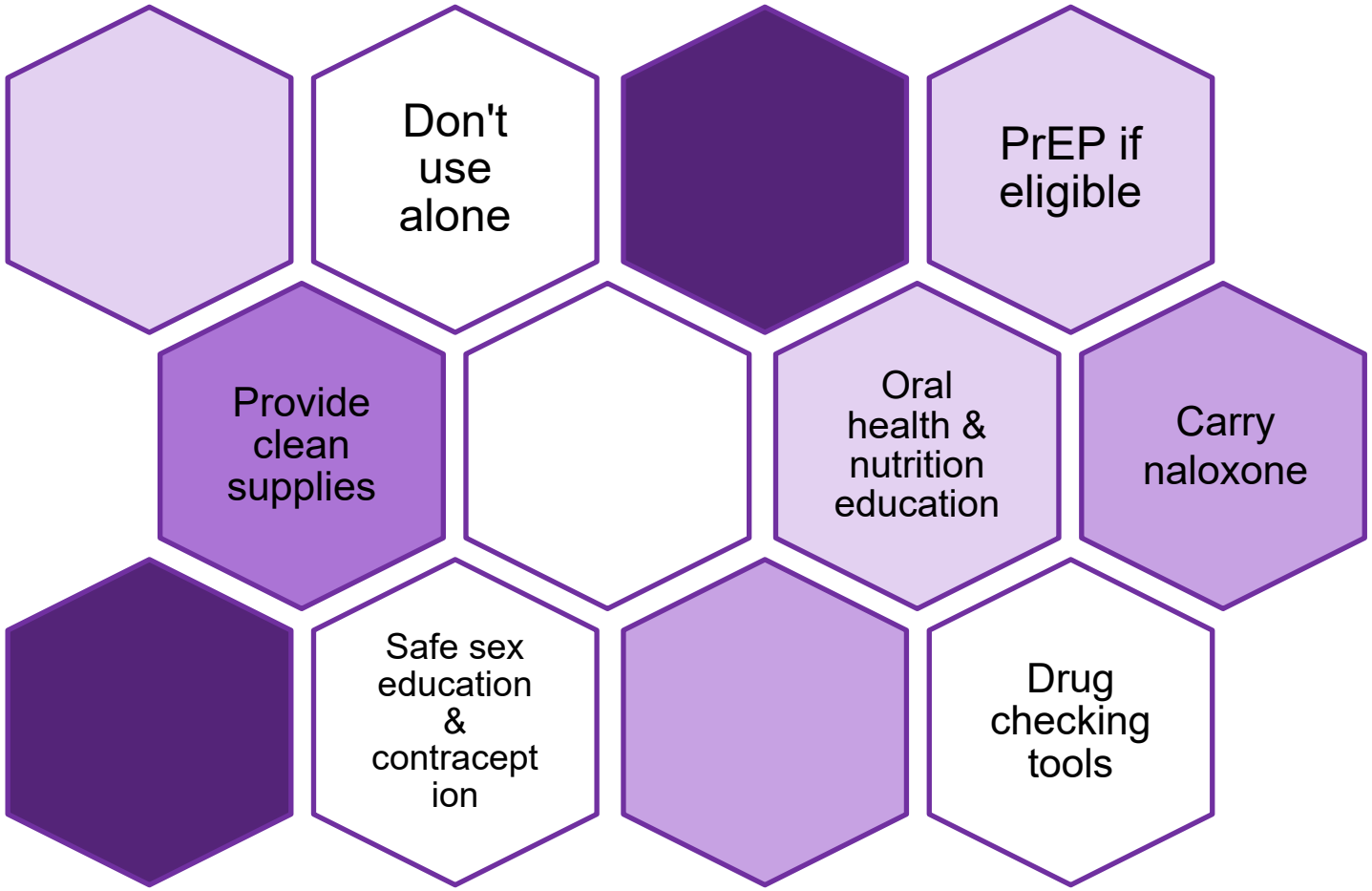
Conclusions are <u>limited</u>

Pharmacotherapy*

Cocaine Use	Amphetamine Use
Bupropion	Mirtazapine
Modafinil • Without co-occurring alcohol use disorder	Bupropion (+/- Naltrexone-XR) • Monotherapy for low to moderate use only • Combination therapy for those with alcohol use disorder
Topiramate (+/- Mixed Amphetamine Salts) • Consider with co-occurring alcohol use disorder	Topiramate • Consider with co-occurring alcohol use disorder
Amphetamine formulations • At or above highest recommended dose	Methylphenidate • At or above highest recommended dose

**From DRAFT ASAM/AAAP guidelines for public comment*

Harm Reduction Principles



Additional Tips

- Stimulant withdrawal can be prolonged and miserable, don't minimize it
- Stimulants can be contaminated with fentanyl, counsel people accordingly on minimizing their overdose risk
- Beta-blockers **should not** be avoided in people who use stimulants when medically indicated

Start by trying to understand the role that a stimulant plays in someone's life and your treatment options will often become much clearer

Summary

- Cocaine and crystal methamphetamine are the most commonly used unregulated stimulants in North America
- Both prevalence and consequences of stimulant use are increasing and are contributing to the overdose crisis (especially methamphetamine)
- Management of intoxication and withdrawal is generally with supportive care
- Psychosocial and pharmacologic treatment options for stimulant use disorder do exist, contingency management is the best evidenced tool
- Harm reduction counseling is a critical component of care

References

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- Winkelman T et al. (2018). Evaluation of Amphetamine-Related Hospitalizations and Associated Clinical Outcomes and Costs in the United States. JAMA Netw Open, 1(6):e183758.

CME Post-Test Question #1

1. Which of the following is NOT a commonly used stimulant-type substance?

a) Cocaine
b) Crystal methamphetamine
c) Phencyclidine
d) MDMA

Correct Answer Feedback: That's correct! Phencyclidine is classified as a dissociative anaesthetic, all other choices are classified as stimulants.
Incorrect Answer Feedback: That's incorrect. Phencyclidine is classified as a dissociative anaesthetic, all other choices are classified as stimulants.

Reference: Vearrier D et al. (2012). Methamphetamine: History, Pathophysiology, Adverse Health Effects, Current Trends, and Hazards Associated with the Clandestine Manufacture of Methamphetamine. Dis Mon, 58:38-89.

CME Post-Test Question #2

2. Stimulants effects are mediated by which neurotransmitters/receptors in the central nervous system?

a) Mu-opioid receptors
b) Dopamine receptors
c) NMDA receptors
d) GABA receptors

Correct Answer Feedback: That's correct! Stimulants exert their effects on monoamine neurotransmitters such as dopamine, norepinephrine, and serotonin.
Incorrect Answer Feedback: That's incorrect. Stimulants exert their effects on monoamine neurotransmitters such as dopamine, norepinephrine, and serotonin.

Reference: Vearrier D et al. (2012). Methamphetamine: History, Pathophysiology, Adverse Health Effects, Current Trends, and Hazards Associated with the Clandestine Manufacture of Methamphetamine. Dis Mon, 58:38-89.

CME Post-Test Question #3

3. What percentage of psychostimulant-related overdose deaths in the US did not involve a synthetic opioid in 2020?

a) 10%
b) 20%
c) 50%
d) 90%

Correct Answer Feedback: That's correct! Approximately 50% of psychostimulant-related deaths in the US in 2020 did not involve a synthetic opioid.
Incorrect Answer Feedback: That's incorrect. Approximately 50% of psychostimulant-related deaths in the US in 2020 did not involve a synthetic opioid.

Reference: UNODC, World Drug Report 2022 (United Nations publication, 2022).

CME Post-Test Question #4

4. Which of the following is the best evidenced psychosocial intervention for the treatment of stimulant use disorder?

a) Contingency management
b) 12-step program
c) Bed-based treatment programs
d) Cognitive behavioural therapy

Correct Answer Feedback: That's correct! Cognitive behavioural therapy is the best evidenced treatment for stimulant disorder, especially when combined with s community reinforcement approach.
Incorrect Answer Feedback: That's incorrect. Cognitive behavioural therapy is the best evidenced treatment for stimulant disorder.

Reference: De Crescenzo F et al. (2018). Comparative efficacy and acceptability of psychosocial interventions for individuals with cocaine and amphetamine addiction: A systematic review and network meta-analysis. PLoS Med, 15(12):e1002715.

CME Post-Test Question #5

5. Which of these medications has some evidence suggesting effectiveness in the treatment of stimulant use disorders?

a) Dextroamphetamine
b) Ranitidine
c) Cyclobenzaprine
d) Buprenorphine

Correct Answer Feedback: That's correct! Prescribed psychostimulants such as dextroamphetamine have some evidence supporting their role in the treatment of stimulant use disorders, especially cocaine use disorder.
Incorrect Answer Feedback: That's incorrect. Prescribed psychostimulants such as dextroamphetamine have some evidence supporting their role in the treatment of stimulant use disorders, the other medications do not.

Reference: Tardelli V et al. (2020). Prescription psychostimulants for the treatment of stimulant use disorder: a systematic review and meta-analysis. Psychopharmacology, 237(8):2233-2255.

CME Post-Test Question #6

6. Which of the following is NOT a recommended harm reduction intervention for people who use stimulants.

a) Sterile injection equipment
b) Naloxone kits/nasal spray
c) Fentanyl test strips
d) Lubricated eye drops

Correct Answer Feedback: That's correct! Sterile injection equipment, fentanyl test strips, and naloxone can all be helpful harm reductions for people who use stimulants.
Incorrect Answer Feedback: That's incorrect. Sterile injection equipment, fentanyl test strips, and naloxone can all be helpful harm reductions for people who use stimulants.

Reference: Bach P et al. (2022). British Columbia Centre on Substance Use Stimulant Use Disorder Practice Update. BCCSU, Vancouver, BC, Canada.